

ABSTRACT OF THE DISCLOSURE

Disclosed is a routing apparatus for obtaining routing data conforming to a destination address of a packet that arrives from a line, adding the routing data 5 onto the packet, and switching the packet based upon the routing data to send the packet to a prescribed line. The routing apparatus has a main controller equipped with content addressable memories (CAMs) corresponding to respective ones of line speed. When search key data 10 with an attached line identifier is received from a line card, routing data is generated by the content addressable memory (CAM) corresponding to the line speed and the routing data is sent to the line card. The line card adds routing data of which it has been notified by 15 the main controller onto a packet and then outputs the packet. A switch to which a packet having attached routing data is input from a prescribed line card switches the packet based upon the routing data and sends the packet to another line card.

TEC72-3057946

UNITED STATES PATENT AND TRADEMARK OFFICE
DOCUMENT CLASSIFICATION BARCODE SHEET



Drawings

09767302 - 012304

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FIG. 1

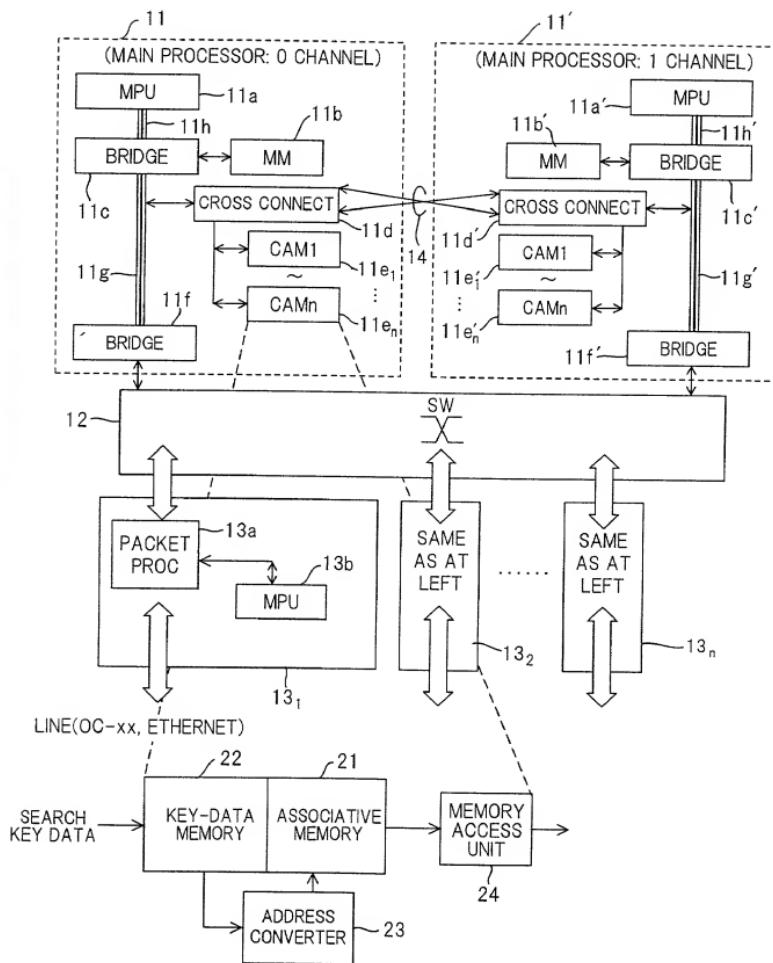


FIG. 2A

TRANSMISSION OF OC-12C PPP PACKET

ITEMS	VALUE	IP DATA FLUCTUATION	TOTAL TRANSFER TIME(μS)
OC-12C TRANSFER TIME	1.6	1	0.36
PPP + FIXED PART OF IP HEADER (bytes)	27	2	0.37
IP DATA FLUCTUATION (bytes)	n	3	0.39
		4	0.40
TOTAL TRANSFER TIME = (n + PPP + FIXED PART OF IP) * OC-12C TRANSFER	~	~	
		10	0.48
		~	~
		64	1.17
		~	~
		128	1.99
		~	~
		1024	13.52
		~	~
		1500	19.64

FIG. 2B

TRANSMISSION OF OC-192C PPP PACKET

ITEMS	VALUE	IP DATA FLUCTUATION	TOTAL TRANSFER TIME(μS)
OC-192C TRANSFER TIME(ns)	0.1	1	0.02
PPP + FIXED PART OF IP HEADER (bytes)	27	2	0.02
IP DATA FLUCTUATION (bytes)	n	3	0.02
		4	0.02
TOTAL TRANSFER TIME = (n + PPP + FIXED PART OF IP) * OC-192C TRANSFER	~	~	
		10	0.03
		~	~
		64	0.07
		~	~
		128	0.12
		~	~
		1024	0.84
		~	~
		1500	1.23

00000000000000000000000000000000

FIG. 3

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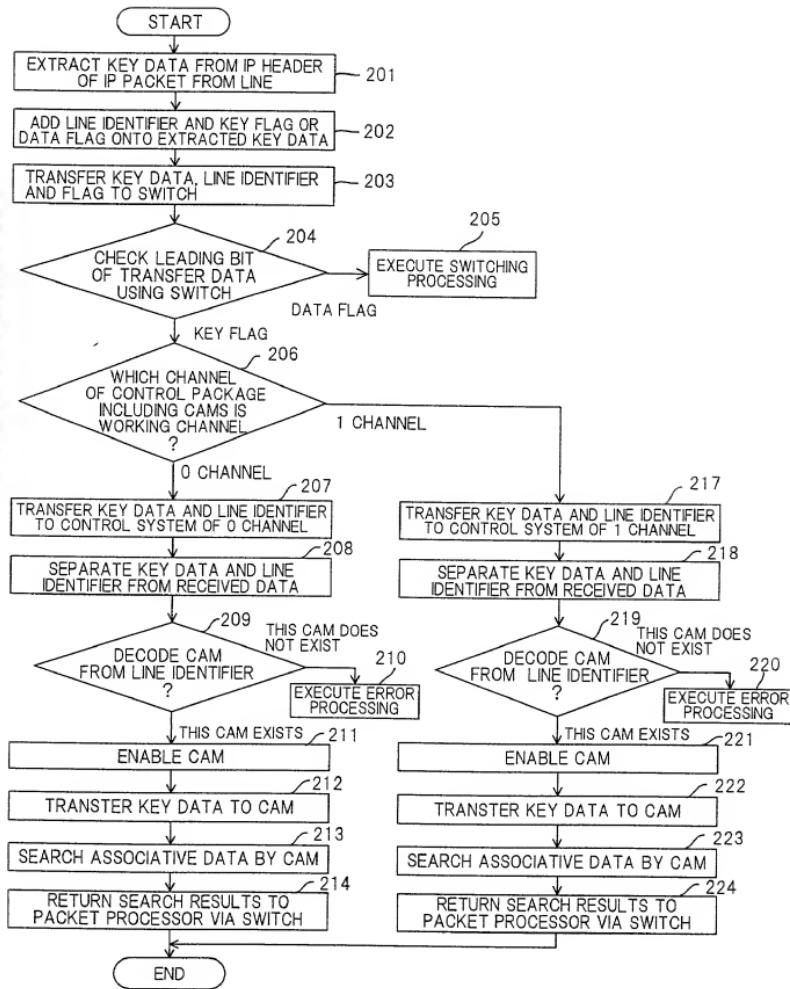


FIG. 4A

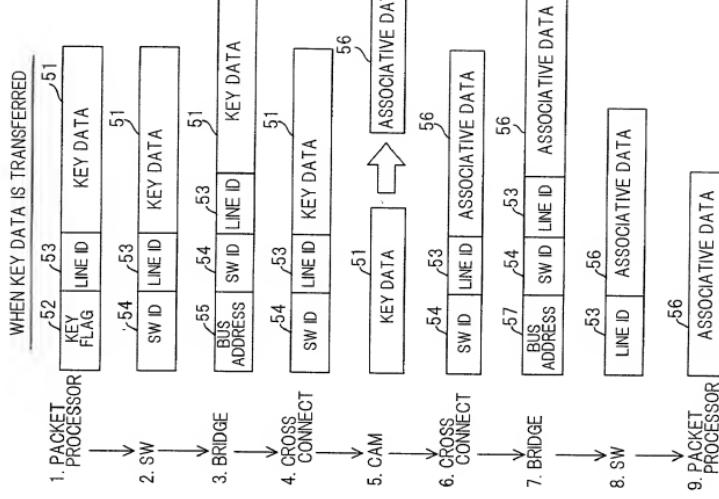


FIG. 4B



FIG. 5

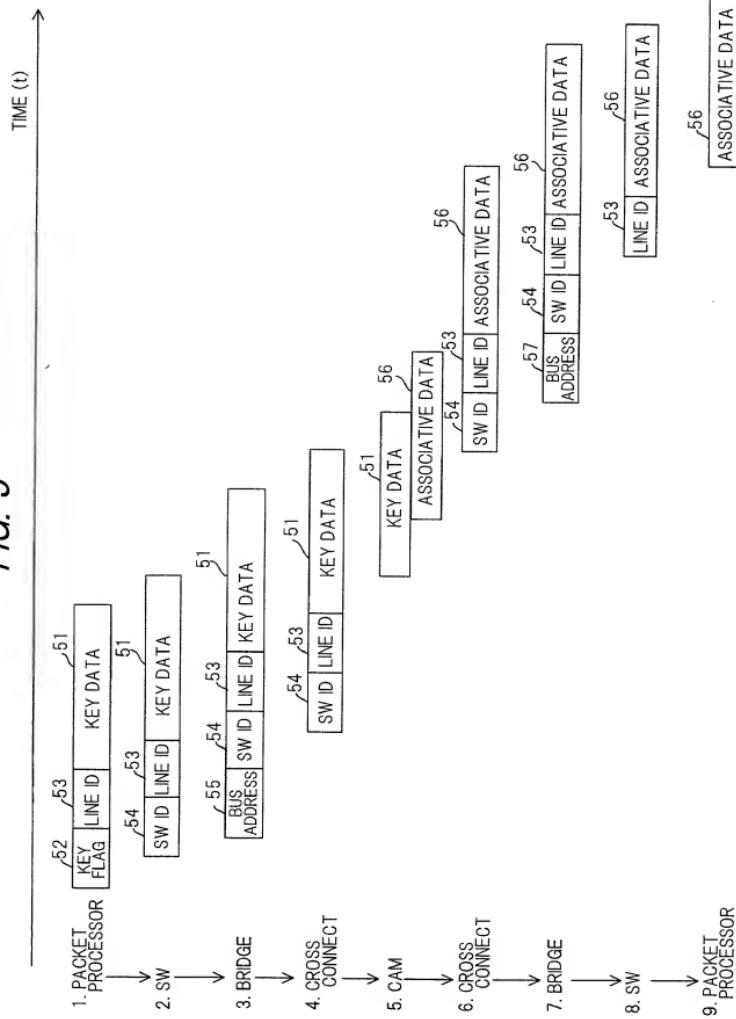


FIG. 6

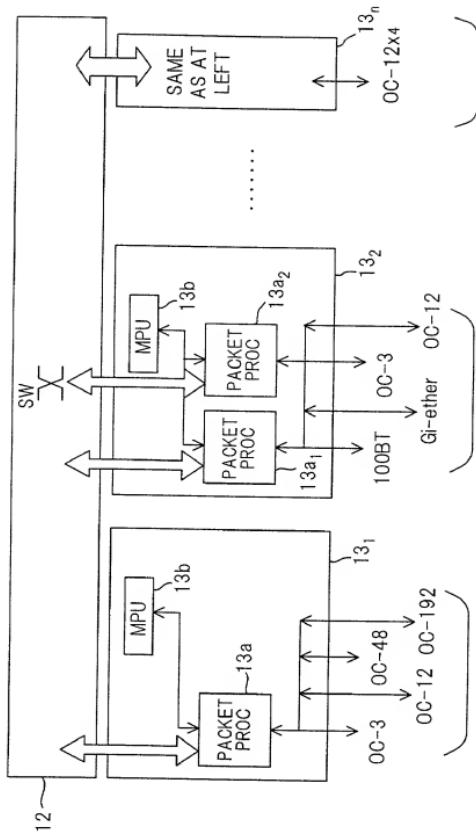


FIG. 7

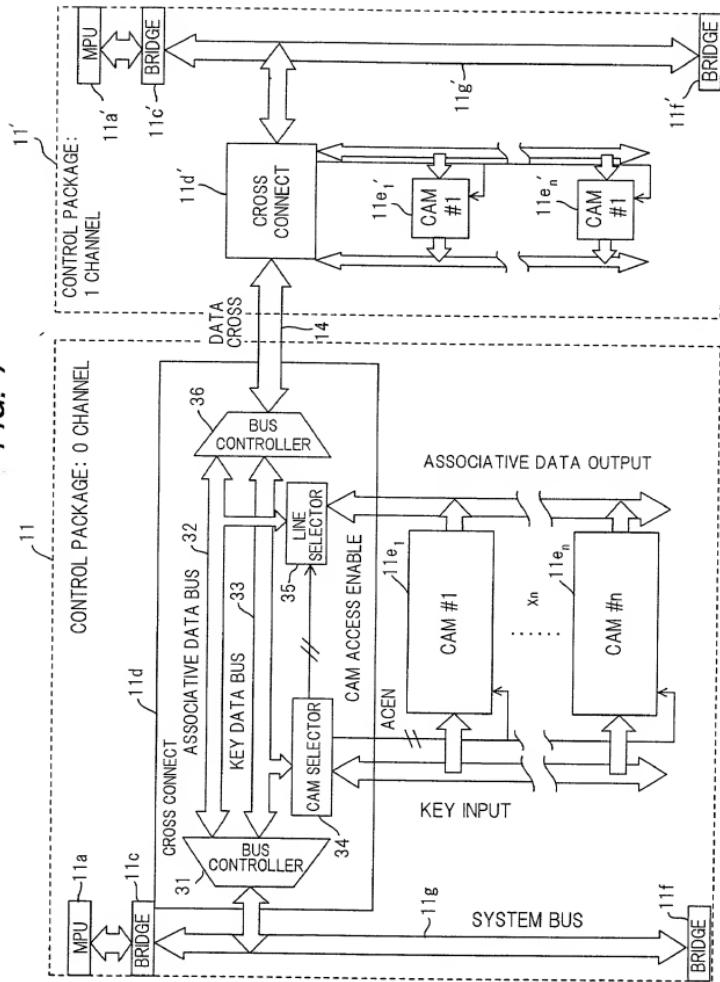


FIG. 8

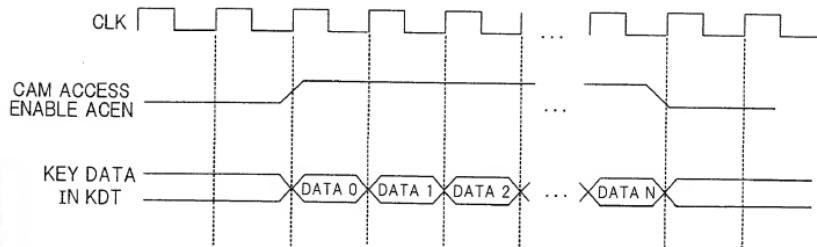


FIG. 11

RAM CELL WIDTH (bytes)		1	1
RAM CELL WORD COUNT	y	1,000	16,384
KEY DATA WIDTH (bytes)	k	4	16
ASSOCIATIVE DATA WIDTH (bytes)	r	2	2
TOTAL ENTRY COUNT		↓	↓
$e = y/(k+r)$	=	167	910

FIG. 9

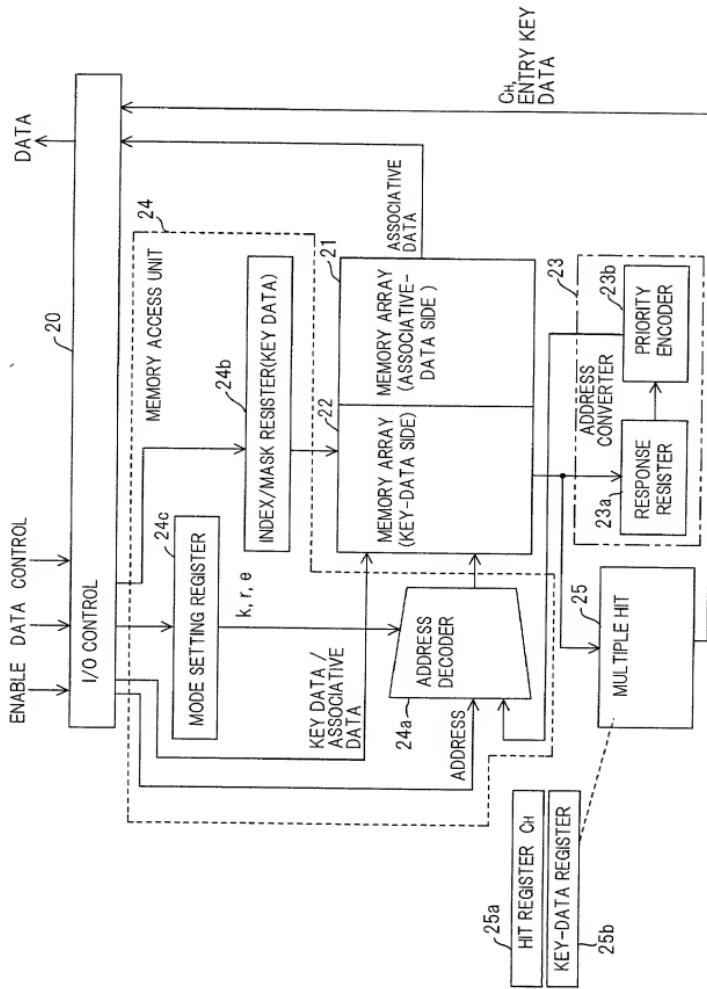


FIG. 10

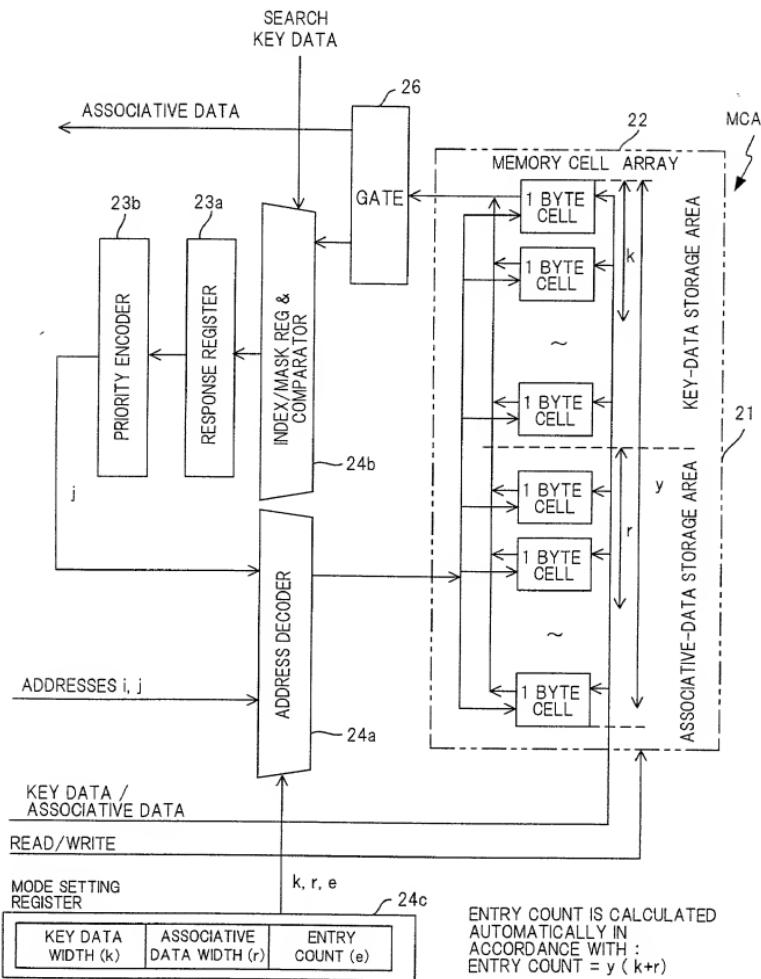


FIG. 12

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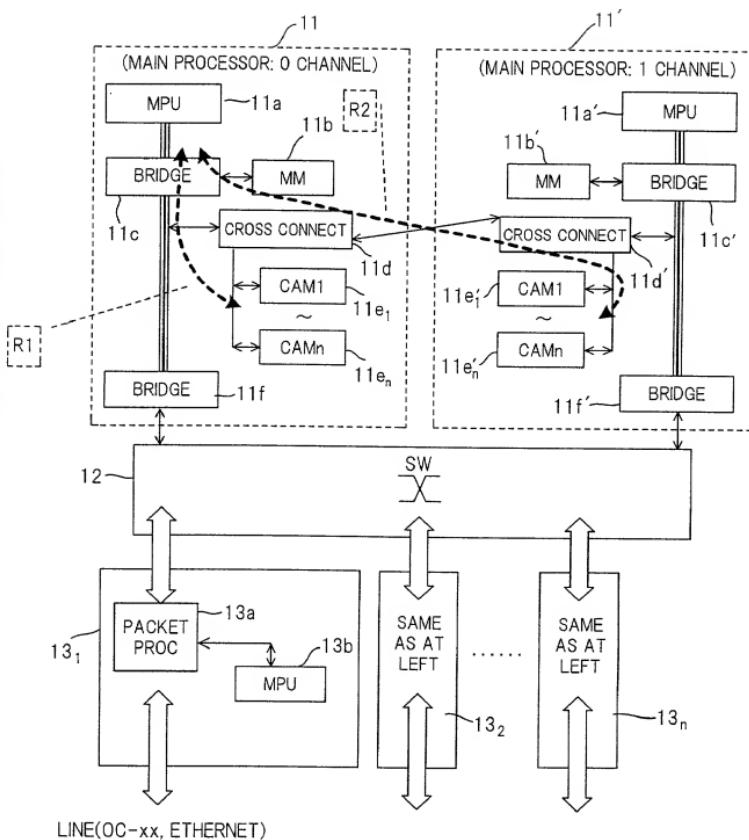
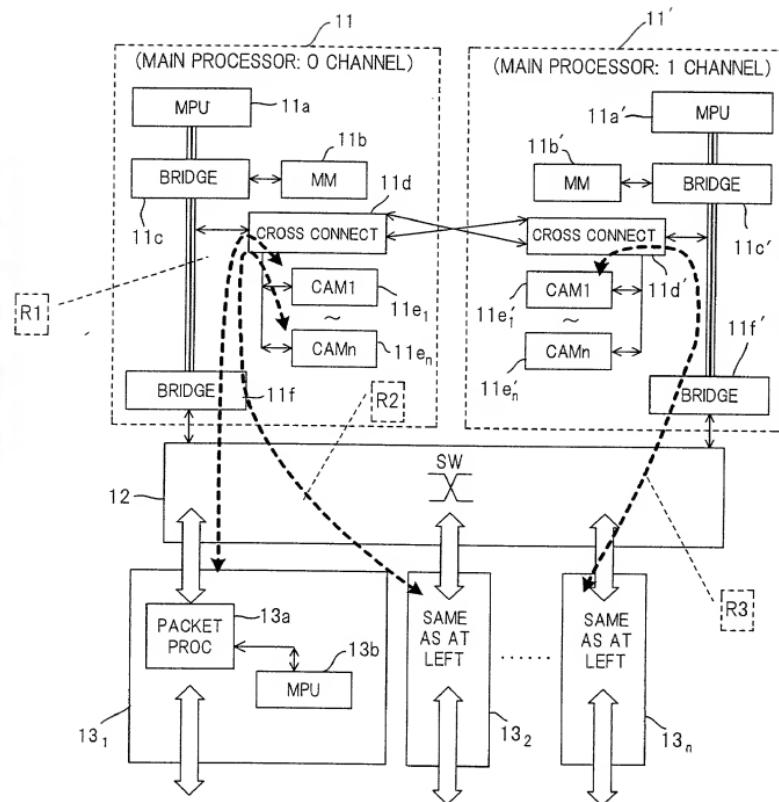


FIG. 13



LINE(OC-xx, ETHERNET)

FIG. 14

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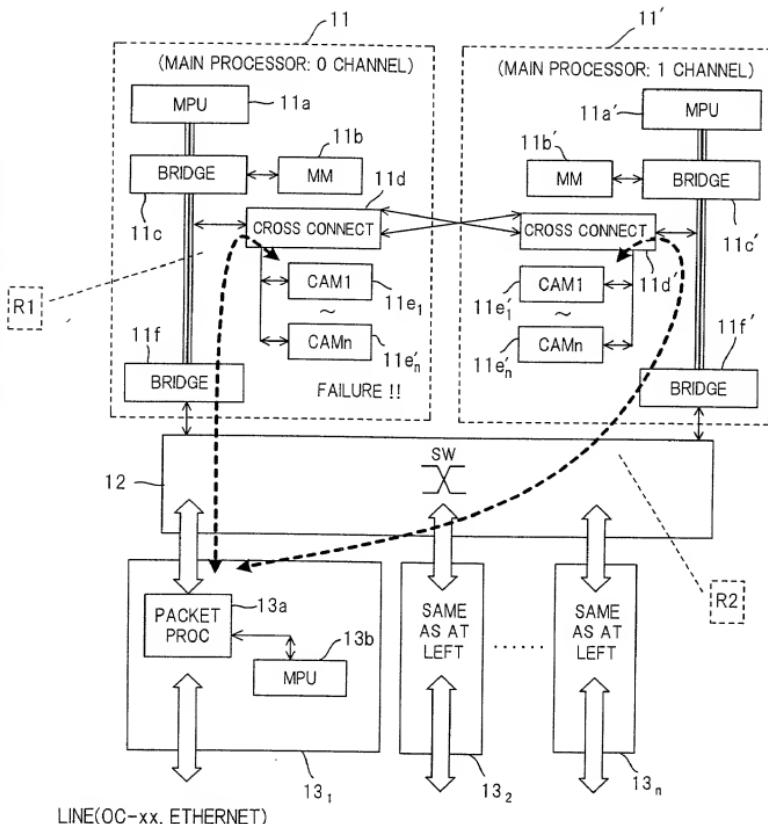


FIG. 15 PRIOR ART

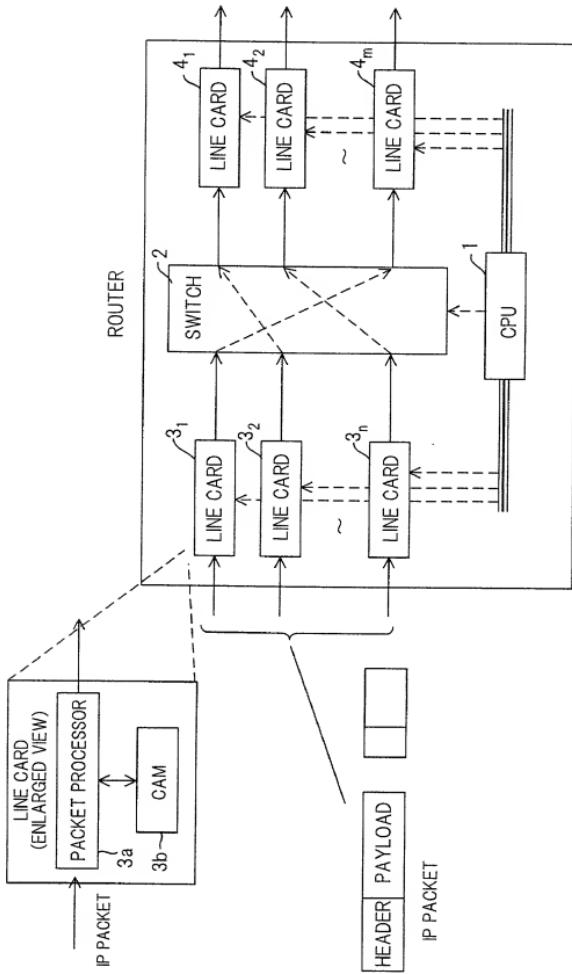


FIG. 16 PRIOR ART

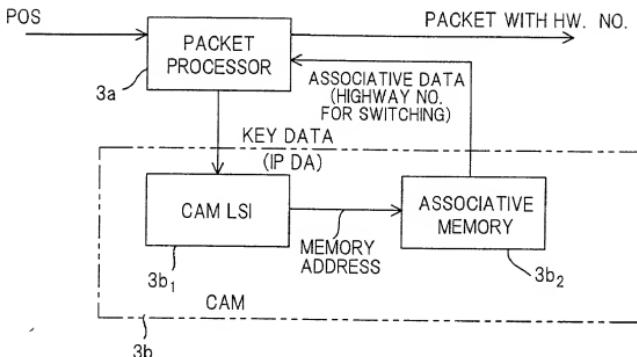


FIG. 17 PRIOR ART

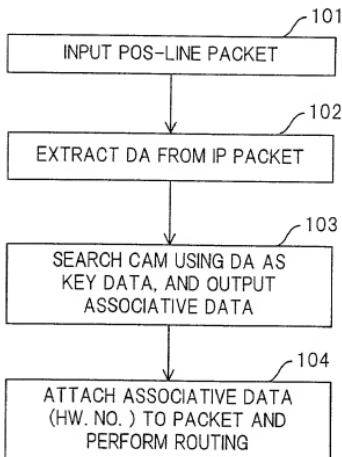


FIG. 18 PRIOR ART

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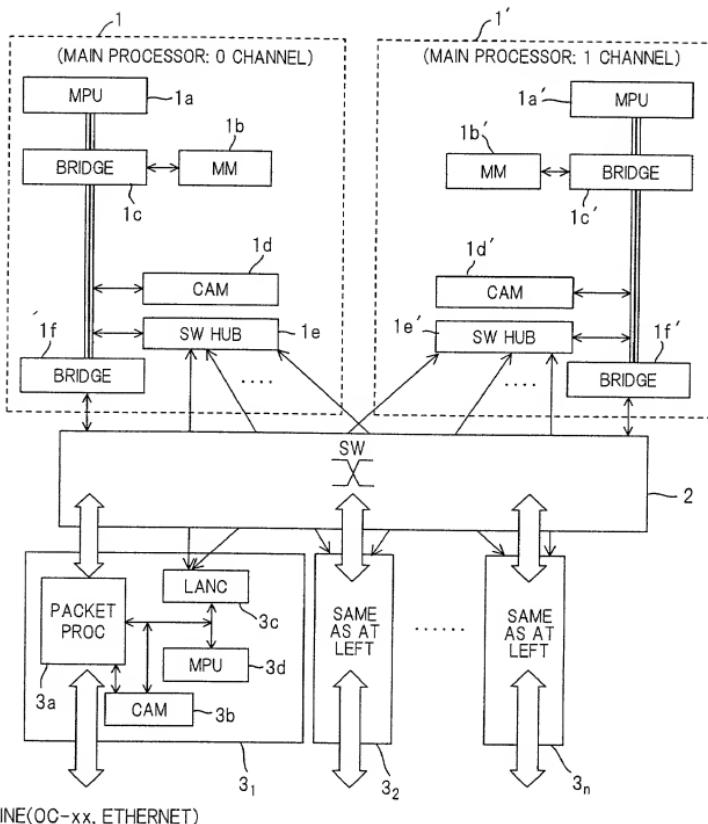


FIG. 19 PRIOR ART

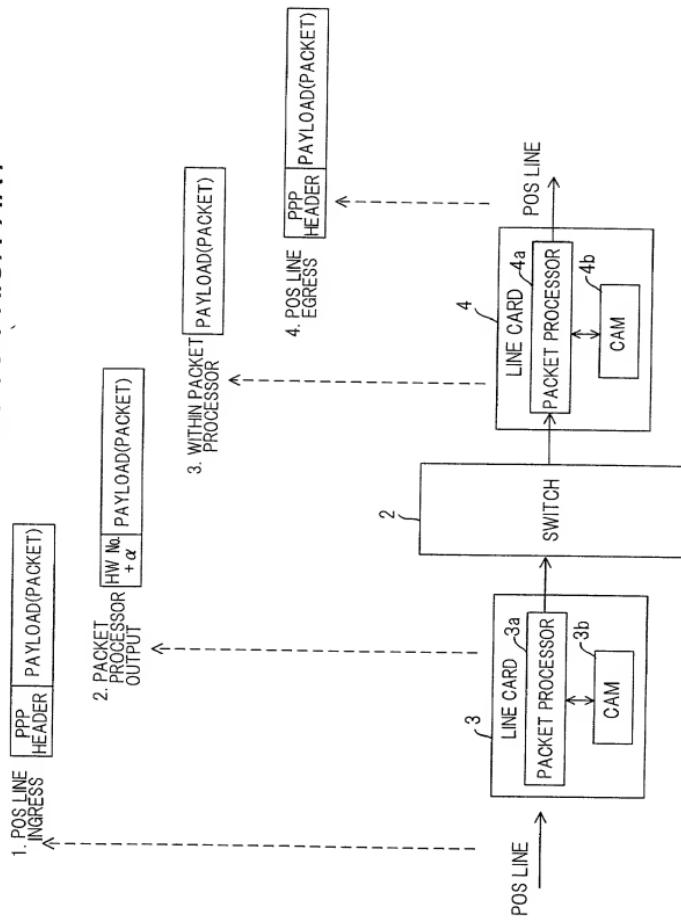
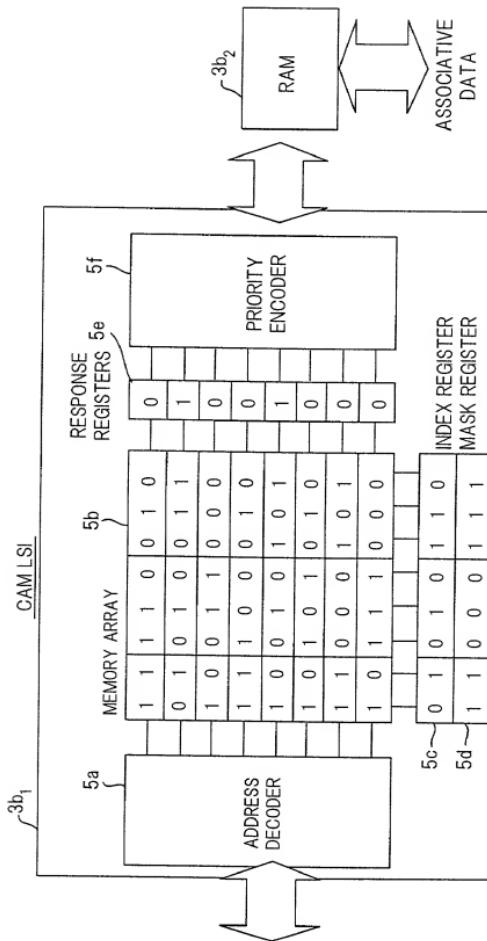


FIG. 20 PRIOR ART



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**Oath/Declaration, Small Entity,
and Power of Attorney**

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Declaration and Power of Attorney For Patent Application

特許出願宣言書及び委任状

Japanese Language Declaration

日本語宣言書

下の氏名の発明者として、私は以下の通り宣誓します。 As a below named inventor, I hereby declare that:

私の住所、私書箱、国籍は下記の私の氏名の後に記載された通りです。

My residence, post office address and citizenship are as stated next to my name.

下記の名称の発明に関して請求範囲に記載され、特許出願している発明内容について、私が最初かつ唯一の発明者（下記の氏名が一つの場合）もしくは最初かつ共同発明者であると（下記の名称が複数の場合）信じています。

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

ROUTING APPARATUS

上記発明の明細書（下記の欄でx印がついていない場合は、本欄に添付）は、

the specification of which is attached hereto unless the following box is checked:

一月一日に提出され、米国出願番号または特許協定条約国際出願番号を _____ とし、
(該当する場合) _____ に訂正されました。

was filed on _____
as United States Application Number or
PCT International Application Number
_____ and was amended on
_____ (if applicable).

私は、特許請求範囲を含む上記訂正後の明細書を検討し、内容を理解していることをここに表明します。

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

私は、連邦規則法典第37編第1条56項に定義されるところ、特許実務の有無について重要な情報を開示する義務があることを認めます。

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Japanese Language Declaration
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私は、米国法典第35編119条(a)-(d)項又は365条(b)項に基づく米国法典第35編119条(a)-(d)項に基づく米国以外の国の少なくとも一ヵ国を指定している特許協力条約365条(c)項に基づく国際出願、又は外国での特許出願もしくは発明者証の出願についての外国優先権をここに主張とともに、優先権を主張している。本出願の前に出願された特許または発明者証の外国出願を以下に、枠内をマークすることで、示しています。

Prior Foreign Application(s)

外国での先行出願

TOKUGAN 2000-295841

Japan

(Number) (番号)	:	(Country) (国名)
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(Number) (番号)	:	(Country) (国名)
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(Application No.) (出願番号)	(Filing Date) (出願日)
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(Application No.) (出願番号)	(Filing Date) (出願日)
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(Application No.) (出願番号)	(Filing Date) (出願日)
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私は、私自身の知識に基づいて本宣言書中で私が行なう表明が真実であり、かつ私の入手した情報との信じるところに基づく表明が全て真実であると信じてること、さらに故意になされた虚偽の表明及びそれと同一の行為は米国法典第18編第1001条に基づき、罰金または拘禁、もしくはその両方により罰せられること、そしてそのような故意による虚偽の声明を行なえば、出願した、又は既に許可された特許の有効性が失われることを認識し、よってここに上記のごとく立誓を致します。

I hereby claim foreign priority under Title 35, United States Code, Section 119 (a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

Priority Not Claimed

優先権主張なし

28/09/2000

(Day/Month/Year Filed)

(出願年月日)

(Day/Month/Year Filed)

(出願年月日)

I hereby claim the benefit under Title 35, United States Code, Section 119(e) of any United States provisional application(s) listed below.

(Application No.)

(出願番号)

(Filing Date)

(出願日)

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s), or 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code Section 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of application.

(Status: Patented, Pending, Abandoned) (現況: 特許許可済、係属中、放棄済)

(Status: Patented, Pending, Abandoned) (現況: 特許許可済、係属中、放棄済)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Japanese Language Declaration

(日本語宣言書)

委任状： 私は下記の発明者として、本出願に関する一切の手続を米特許商標局に対して遂行する弁理士または代理人として、下記の者を指名いたします。（弁護士、または代理人の氏名及び登録番号を明記のこと）

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith (list name and registration number)

書類送付先

Aaron B. KARAS, Reg. No. 18,923; Samson HELGOTT, Reg. No. 23,072 and Leonard COOPER Reg. No. 27,625
Send Correspondence to:
HELGOTT & KARAS, P.C.
Empire State Building, 60th Floor
New York, New York 10118
United States of America

直接電話連絡先：（名前及び電話番号）

Direct Telephone Calls to: (name and telephone number)

Halfgott & Karas, P.C.
(212) 643-5000

第一または第一発明者名

Full name of sole or first inventor

Kazuyuki Sato

発明者の署名

Inventor's signature

住所

Residence

Sendai, Japan

国籍

Citizenship

Japanese

私営業

Post Office Address

c/o FUJITSU TOHOKU
COMMUNICATION SYSTEMS LIMITED,
3-3-5, Ichibancho Aoba-ku, Sendai,
Miyagi 980-0811 Japan

第二共同発明者

Full name of second joint inventor, if any

Takuya Terawawa

第二共同発明者

Second inventor's signature

Date January

Takuya Terawawa 07, 2001

住所

Residence

Sendai, Japan

国籍

Citizenship

Japanese

私営業

Post Office Address

c/o FUJITSU TOHOKU
COMMUNICATION SYSTEMS LIMITED,
3-3-5, Ichibancho Aoba-ku, Sendai,
Miyagi 980-0811 Japan

(第三以降の共同発明者についても同様に記載し、署名をすること)
(Supply similar information and signature for third and subsequent joint inventors.)

THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of: **Kazuyuki SATO, et al.**

Filed : **Concurrently herewith**

For : **ROUTING APPARATUS**

Serial No. : **Concurrently herewith**

January 23, 2001

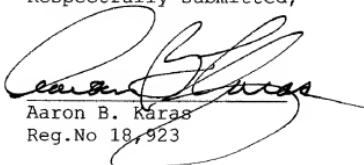
Assistant Commissioner of Patents
Washington, D.C. 20231

SUB-POWER OF ATTORNEY

S I R:

I, Aaron B. Karas, Reg. No. 18,923 attorney of record herein, do hereby grant a sub-power of attorney to Linda S. Chan, Reg. No. 42,400, Harris A. Wolin, Reg. No. 39,432, Brian S. Myers, Reg. No. 46,947 and Michael Markowitz, Reg. No. 30,659 to act and sign in my behalf in the above-referenced application.

Respectfully submitted,



Aaron B. Karas
Reg. No 18,923

HELGOTT & KARAS, P.C.
60th FLOOR
EMPIRE STATE BUILDING
NEW YORK, NY 10118
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By: Brendy Lynn Belony

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